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Application of the Problem Solving Learning Model in Improving Science Learning Outcomes of Class VI Students of UPT SD Negeri 6 Pangkajene Sidenreng Rappang District

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ABSTRAK

Low learning outcomes are a problem in this research. The question asked was whether class VI students at UPT SD Negeri 6 Pangkajene, Sidenreng Rappang Regency would learn better by using the Problem Solving learning approach. This research was carried out to find out whether the results of students' science subjects had improved. The type of research used is CAR, the methodology used is qualitative. Procedures and outcomes are the primary focus of the investigation. The research was conducted at UPT SD Negeri 6 Pangkajene, Sidenreng Rappang Regency. Teachers and students of class VI UPT SD Negeri 6 Pangkajene were used as research subjects. There are 18 students registered for the 2023–2024 academic year, divided into 10 female students and 8 male students, carried out in two cycles. Each cycle has 4 stages, namely planning, implementation, observation and reflection. Based on the information generated in cycles I and II, implementation data was collected through the observation, test results, learning and documentation stages. The results of cycle I research are included in category (C) for process emphasis and category (C) for results focus. Meanwhile, in cycle II it can be categorized as (B). The results of the research that has been carried out have increased learning outcomes in science content regarding sources of electrical energy and distribution of electrical energy.

Kata Kunci: *Model Problem Solving; Hasil Belajar; Sumber Energi Listrik*

ABSTRACT

Keywords: Problem Solving Model; Learning outcomes; Sources of Electrical Energy

BACKGROUND

Education is the main measure of the development of a country, to effectively implement the state's goals outlined in the constitution, namely making an intelligent society, quality education is needed. According to (N Zulkifli, Handy Ferdiansyah, M Usman, Hasni Hasni, 2022) A nation's ability to survive is very dependent on its level of education. Because education is a tool that can increase human knowledge.

(Sinambela, 2022) states that to carry out learning, students must be given the freedom to think, understand challenges,

develop strategies to solve difficulties, and express ideas freely and openly. This is mandated by the 2013 curriculum. Teaching students to be more creative and improve their critical thinking about challenges is a teacher learning activity. Instructors need to make efforts to form cooperative learning groups and teach students how to use graphs, diagrams, schematics, and variables to communicate. To learn various concepts, problem solving techniques, rules and principles discovered during the learning process, it is intended that all work results are always presented in front of the class .

The functions and responsibilities of instructors play an important role in the field of education. In both formal and informal learning environments, teachers play the most significant role in the teaching and learning process. As a result, despite progress in the field of education in the country, many problems related to teachers' work remain unresolved. In essence, learning is a cause-and-effect process. Although not all student learning is a direct result of teacher teaching, teachers themselves are the main cause of student learning. To motivate students to get involved in activities

active, useful, and successful learning, the teacher, who acts as a focal figure, must be able to identify acceptable learning tactics. Teachers must consider students' readiness, maturity and behavior (Umasugi, 2020).

Based on the results of observations that the prospective researcher has carried out, namely conducting questions and answers with the principal and class teacher of class VI UPT SD Negeri 6 Pangkajene, regarding the teaching and learning process in class VI and also the prospective researcher obtained data about students, the number of class VI students is 18 students namely 10 women, 8 people, male students. The daily score for science content was that out of 18 students, only 6 children achieved a score of >75 SKMB, while the percentage achieved was 33.3%, while the other 12 children did not reach a score of >75 SKMB (Minimum Learning Completion Standard) with a percentage of 66.7 %.

Efforts must be made to improve learning outcomes in the material "Sources of Electrical Energy and Distribution of Electrical Energy" in order to produce maximum results, therefore prospective researchers will apply the Problem Solving learning model, namely that students are required to think more critically in the teaching and learning process so that they can solve the problem.

METHOD

Research Approach

The approach used by researchers is a qualitative approach. Heavy analysis techniques are known as qualitative approaches to research. According to (Wahidwarni, 2020) qualitative research techniques are used to overcome problems with data such as the results of observations, interviews and analysis of documents. An in-depth understanding is needed to be able to thoroughly describe the methodology and type of research, whereabouts of researchers, locations for research, sources of data required, procedures for data collection, data analysis, and verification of truth findings in proposals and/or research reports for each of these ideas

Meanwhile, according to Fadli, (2021) in qualitative research, analysis must be carried out carefully so that the data collected can be conveyed well and produce valuable research. Meanwhile, this time I want to study it in depth to understand qualitative research design from ideas to coding of the resulting data.

Type of Research

The type of research used in this research will be classroom action research

(PTK). According to (Nurdin, 2019) classroom action research is a methodical investigation of how a group of instructors can better implement educational practices by engaging in learning activities and reflecting on the results of those activities. The main objective of PTK is to develop and increase the professional services provided by teachers in managing the teaching and learning process. The following are three PTK concepts.

1) ction, defined as a deliberate action carried out with a purpose in research in the form of a series of activity cycles
2) Class, considered as a group of students who receive the same teaching at the same time.

Research Design

The research was conducted using 2 cycles, where the 2 cycles are interrelated. The cycle used in this research is: planning, implementation, observation, and reflection.

Research Instrument

1) Observation

According to Ni'matuzahroh & Prasetyaningrum, (2018) stated that apart from interviews, observation is one of the main psychological assessment techniques. To be effective as an assessment technique, observation must be a planned and methodical activity that can be measured. It's not enough just to observe something. Observations made by observers to see directly the problem solving learning process in each cycle. From the data obtained by the observation format which is used as reflection material for researchers regarding teacher and student activities.

2) Test

A test is a method of collecting data that consists of a number of questions designed to assess the knowledge, skills and abilities of each student. Through the use of the Problem Solving learning paradigm, techniques are utilized to assess student knowledge. A multiple choice test with a total of 20 questions and 4 answer choices is used for the final evaluation.

3) Dokumentation

Documentation techniques are the way researchers collect data in the form of images or writing. The results obtained when conducting research are that important documents obtained during the learning process include the name of the principal, teacher's name, list of student grades, list of student attendance, number of students, as well as photos and videos during the research as complementary data in this research later.

Technique of Data Analysis

he method used is qualitative data analysis, examining teacher and student actions in the learning process and also learning outcomes through the use of the Problem Solving learning model.

According to Noeng Muhadjir in Rijali, (2019) Data analysis is an effort to compile observation notes and interviews. Systematically, in order to increase researchers' knowledge of what they are researching, the method used is qualitative data analysis, examining teacher and student actions in the learning process and also learning outcomes through the use of the Problem Solving learning model.

The Result of indicator

a. Indicators of success in this research process will be said to have been successful if all steps in the Problem Solving learning model are implemented properly and correctly so that it will be said to be successful in category (G)
b. Indicators of successful results, this research is considered to have been successful if it has reached the minimum standard of learning completion, namely 75 and above, which has been set by the school.

According to (Syamsunir Syamsunir, 2021) media is needed that suits the student's personality, the learning being taught, the environment and the necessary infrastructure are all needed for optimal learning. Students can assess or increase their level of learning motivation with the effective use of learning resources

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No	Result	Qualification
1	75%<NR≤100%	Good(G)
2	60%< NR≤75%	Enought (E)
3	0%<NR≤59%	Less (L)

Source : (Wongkar & Sumarno, 2020)

FINDING AND DISCUSSION

Finding

Circle 1

Planning

At this stage the researcher prepares several things that are needed, namely: Analyzing the curriculum, making a lesson plan, reviewing the material, compiling observation sheets for students and teachers, making group worksheets, making multiple choice test questions.

Action

The First Action

The learning process starts with the teacher saying check the students' attendance, and continues with praying before studying. After that the teacher gave a little explanation about the learning material that he wanted to present to the students, namely material about producing electrical energy. Next, the teacher divides the students into 4 groups, then the students are directed to gather with their group friends.

Core Activities

This activity was carried out by 18 students. In accordance with the steps of the problem solving learning model according to (Syahni et al., 2023) as follows:

1) Define the problem
2) Solve problems
3) Search for data and formulate a hypothesis
4) Testing the hypothesis
5) Accept the correct hypothesis

Closing

In the closing activity, the teacher distributed cycle I evaluation question sheets containing 20 multiple choice points to find out to what extent their knowledge after the problem solving steps were implemented experienced an increase in students' learning results. Next, the teacher closes the lesson by saying a prayer after learning, guided by the class leader.

Observation

The teacher aspect

In applying the steps of the Problem Solving learning model, the results are obtained:

1) Determining the problem (There is a clear problem to be solved). The teacher only carries out 1 indicator and is categorized (B). The category that is fulfilled is that the teacher explains the types of problems related to the material to students. The categories that have not been implemented are, the teacher gives material to students, the teacher gives description of the problem that students will solve

2) Problem solving (Searching for informational data that can be used). The teacher implements 3 indicators categorized (G). And what is included in the implemented category is, the teacher helps students to solve problems, the teacher helps students to melt data, the teacher helps students to solve problems

3) Searching for data and formulating a hypothesis (Determining a temporary answer), the teacher carries out 2 indicators in category (G). And the categories

implemented are, the teacher divides students into several groups, the teacher allows students to look for solutions and other references. What has not been implemented is that the teacher provides an overview of the problem that will be solved.

4) Testing the dipothesis (testing the correctness of temporary answers), the teacher has carried out 3 points categorized as (B). The point that is implemented is, the teacher asks students to make a report on the results of their group discussion, the teacher directs students to make a report on the results of their group work discussion, the teacher asks students to make the final conclusion of their group discussion.

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5) Steps to accept the correct hypothesis (Drawing conclusions). The teacher only does 1 point which is categorized as (G). The point that is implemented is that the teacher invites students to present the results of their group's work. The points that have not been implemented are, the teacher directs students to ask questions during the presentation, the teacher provides explanations as the presentation progresses

From this description it can be concluded that teachers who do 10 points out of 15 points have a percentage of 66.66% or are in category (E). So the level of success is categorized as not having reached and not being in accordance with the SKMB that has been determined

.

Students Aspect

From the results of observations on students, starting from opening the learning process to closing the learning process by giving scores according to the information on the student assessment sheet. Based on the results of observation aspects of cycle I students only obtained category (E) with a percentage of 52.59%, it can be concluded that the teaching and learning process has not achieved the predetermined results.

Reflection

The first cycle stage was carried out in order to find out whether the learning process could be successful if the problem solving learning model was applied to the material that produces electrical energy. From the observations and evaluation tests that have been carried out, it can be concluded that the results of observations on the teacher aspect are in category (E). The results of learning observations on the student aspect also received category (E). Of the total student test results, out of 18 students, only 4 students had scored > 75 SKMB with a completion percentage of 22.22% and 14 students who had not achieved SKMB with a completion score of 77.77% were in the incomplete category so they were qualified (E).

The Second Cycles

Planning

At this stage the researcher prepares several things that are needed, namely: Analyzing the curriculum, making a lesson plan, reviewing the material, compiling observation sheets for students and teachers, making group worksheets, making multiple choice test questions.

Action

The beginning activity

The initial implementation involves the teacher giving greetings, checking students' attendance, and continuing with prayer before studying. After that, the teacher gave a little explanation about the learning material that he wanted to present to the students, namely material about producing electrical energy. Next, the teacher divides the students into 4 groups, then the students are directed to gather with their group friends.

Main Core Activities

This activity was carried out by 18 students. And in accordance with the steps in the

problem solving learning model according to (Syahni et al., 2023) as follows:
1) Define the problem
2) Solve problems
3) Search for data and formulate a hypothesis
4) Testing the hypothesis
5) Accept the correct hypothesis

Closing

In the closing activity, the teacher distributed cycle II evaluation question sheets containing 20 multiple choice points to find out to what extent their knowledge after the problem solving steps were implemented experienced an increase in student learning outcomes. After that, the teacher closes the learning process by saying a prayer after learning guided by the class leader.

Observation

The teacher Aspect

In the teaching and learning process on the teacher aspect in implementing the steps of the Problem Solving learning model, the results were obtained:

1) Determining the problem (There is a clear problem to be solved). The teacher did 3 points and got category (G). Meanwhile, the point implemented is that the teacher provides material to students, the teacher explains the types of problems related to the material to students, the teacher provides an overview of the problems that will be solved by students.

2) Problem solving (Searching for informational data that can be used). The teacher carries out 3 categorical indicators (G) and the points that are not implemented are, the teacher helps students to solve problems, the teacher helps students to search for data, the teacher helps students to solve problems

3) Searching for data and formulating hypotheses (determining temporary answers), the teacher carries out 3 points categorized (G). The point that is carried out is, the teacher divides students into several groups, the teacher allows students to look for solutions and other references, the teacher provides an overview of the problem that will be solved.

4) Testing the dipothesis (testing the correctness of temporary answers), the teacher has carried out 3 points categorized (B). The points that were not implemented were, the teacher asked students to make reports on the results of their group discussions, the teacher directed students to draw conclusions from the results of their group discussions.

5) Accept the correct hypothesis (Draw a conclusion). The teacher does 2 points and is categorized (G). The points that were not implemented were, the teacher invited students to present the results of their group's work, the teacher directed students to ask questions, the teacher provided explanations as the presentation progressed.

From this description it can be understood that teachers implement 14 categories of indicators from 15 categories of indicators with a percentage of 86.66% which is categorized as (G). It can be concluded that the learning process has been successful so that the research only reaches cycle II.

Students Aspect

From the results of observations, starting from opening the learning process to closing the learning process by giving points according to the information on the student aspect assessment sheet. In observing aspects of cycle II students who have obtained category (G) with a percentage of 75.06%, it can be concluded that the learning process carried out has achieved appropriate results in the categories that have been determined.

Reflection

In cycle II, to find out whether the learning process that has been implemented is successful or not in implementing the problem solving learning model regarding the distribution of electrical energy. From

the results of the teacher's observations, he has reached category (B), the results of observations on the student aspect have also reached category (B). Based on the results of the student evaluation test, there were 18 students, 15 students achieved > 75 SKMB or 83.33% could be categorized as complete, and 3 other students did not meet the SKMB or 16.66% were in the category of not achieving SKMB. From the test results in cycle II it can be concluded that students have reached category (G)

From the overall results of cycle II activities, it can be concluded that the researchers have carried out research even though it needs to be improved a little. The observer has carried out observations and the entire process carried out by the researcher is in accordance with what is in the learning steps.

Discussion

Through the use of the Problem Solving learning model, this research aims to improve the motivation and learning outcomes of class VI students at UPT SD Negeri 6 Pangkajene regarding producing electrical energy and distributing electrical energy.

UPT SD Negeri 6 Pangkajene Regency Sidenreng Rappang which is located on JL. Rajawali number. 143 Majjelling, Maritenggae District, Sidenreng Rappang Regency, is where this research was conducted. The subjects in this research were 18 students of class VI UPT SD Negeri 6 Pangkajene, totaling 18 people, 10 of whom were women and 8 men.

The PTK implementation was carried out according to research procedures carried out on November 28 and December 12 2023. The material presented in cycle I was producing electrical energy, while in cycle II was the application of electrical energy.

Class VI students at UPT SD Negeri 6 Pangkajene were very happy when this model was implemented when the researchers taught them to be very enthusiastic about receiving the learning. As a result, a positive learning environment is created in the classroom through students' active participation in answering questions
.

In cycle I, both the learning process and student learning outcomes were not included in the specified categories. The findings showed that there were 4 students who got a score of more than > 75 and had a completion percentage of 22.22% in the pass category, and 14 students got a low score of < 75 and had a pass percentage of 77.77% in the pass category. This shows the number of students who are classified as sufficient (E) even though they have not met the SKMB, namely 75.

The results of classroom action research showed an increase in learning outcomes in cycle II. This can be seen from the results which show that 3 students who got a score less than 16.66% were in the incomplete group, and 15 students who got a score greater than 75 had a complete percentage of 83.33% in the complete category. It can be concluded that the majority of students are classified as good (G) because they got a school SKMB score of 75.

Based on the statement in cycle I, only 22.22% of students completed, meaning only 4 students received a complete score and as many as 14 students scored below the Minimum Learning Criteria (KKM) and were declared incomplete. In cycle II, 83.33% were well qualified or complete.

Planning, implementation, observation and reflection on the entire process have shown that the use of learning models to solve the problem of generating and distributing electrical energy in class VI UPT SD Negeri 6 Pangkajene has improved student learning outcomes, based on data from cycle I and cycle II.

Conclusion

a. Research starting from cycle I shows that the process focus and results focus are in category (C). During cycle II, the emphasis on process and results is in category (B). Therefore. Can be concluded :
b. Applying the Problem Solving learning model can improve student learning outcomes in the material of producing electrical energy and distributing electrical energy.

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Curriculum vitae

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